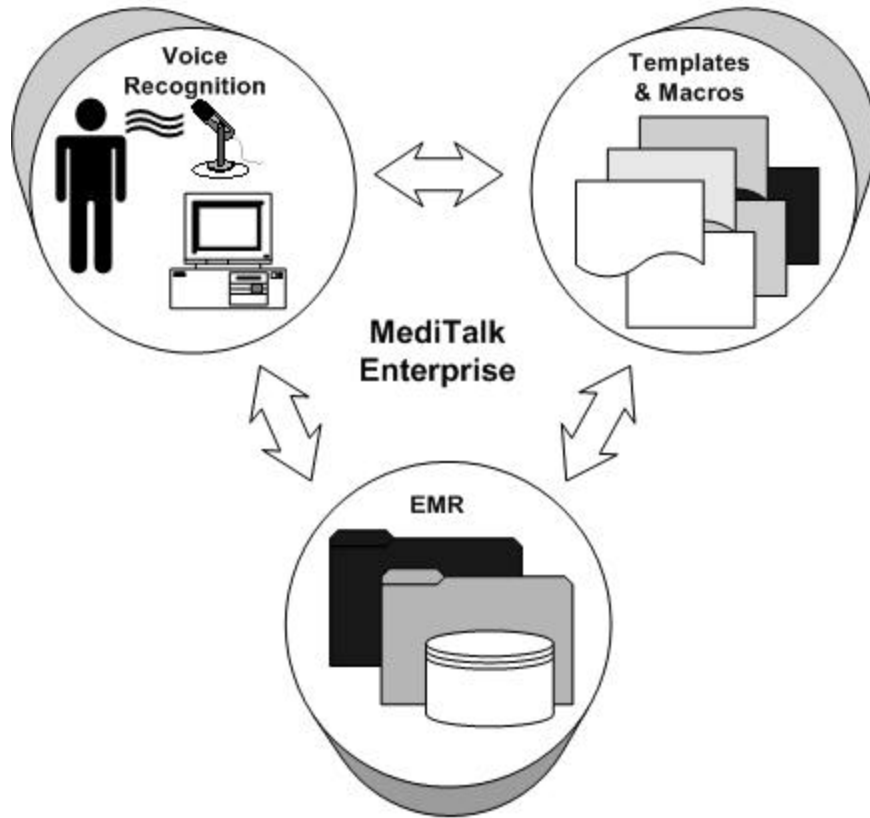


White Paper



Medical Documentation Automation:

Combining Voice Recognition (VR) and
Electronic Medical Records (EMR) Solutions
to Provide Accuracy and Efficiencies while Reducing Cost

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White Paper

Medical Documentation Automation: Combining Voice Recognition (VR) and Electronic Medical Records (EMR) Solutions to Provide Accuracy and Efficiencies while Reducing Cost

Introduction

Comprehensive patient documentation is an absolute requirement for all medical treatment facilities. Accuracy is extremely important for not only the patient but also the clinic and the attending physician. Traditional methods of generating and filing patient medical documentation may vary from practice to practice, but it remains primarily a manual task of typing the dictation and filing and retrieving paper charts. Disadvantages inherent in this manual system include:

A. *Slow Turnaround Time* -- Often there is a lag time between the point that dictation is generated by the physician and time it is returned from the transcription service. This requires additional clerical labor to locate a patient's file and insert the resulting transcribed documentation. In some cases, when turnaround periods are greater than a few days, the patient may return for a follow-up examination before their chart documentation has been properly updated. This can generate care and possibly liability issues for the clinic and physician.

B. *Errors in Dictation and Transcription Process* -- A transcriptionist is human and therefore can produce errors when typing the resulting medical documentation. Other errors can be generated because of such issues as the physician's accent or the quality of the dictation tape. After the resulting documentation has been typed, the physician must proofread to assure there are no errors, necessitating additional time and resources.

C. *Cost of Transcription Services* -- This cost is recurring monthly, averaging \$800 to \$1200 per physician for a typical general practice clinic.

D. *Cost of Document Filing* -- The use of paper documentation requires a filing system, storage space, and clerical services.

E. *Privacy* -- New government regulations are requiring higher levels of security to prevent unauthorized physical access to medical records.

Solving and reducing the cost generated by these issues is a primary goal of Resource Management, Inc. By combining high quality voice recognition software and templates with a robust medical records keeping program, Quincy Systems has established a new generation of medical documentation and productivity tools bundled into one system, which is named "MediTalk".

Voice Recognition

Voice recognition (VR) technology has recently become a powerful solution for speech to text applications. It provides a simple interface to a personal computer, providing the user with the ability to convert voice dialog into a text format quickly and accurately.

This technology is proving to be extremely beneficial to the medical community as an alternative to the classic voice dictation method involving batched tape-recorded voice storage and manual typing by a transcription service. Furthermore, combining voice recognition with electronic file storage and retrieval methods have provided a very unique productivity tool for clinics and hospitals.

The first generation VR programs were clumsy, awkward, and not very accurate. They also required the user to speak in choppy, one-word-at-a-time sentences. This proved to be unnatural and frustrating to the user, causing a high rate of rejection of the product. Unfortunately, the legacy of this fledgling technology has endured, tainting the quality of today's modern VR algorithms.

VR technology today has evolved into a very accurate interface with the personal computer. When properly implemented, it can provide highly productive input of text data.

Successfully Implementing VR

Although the voice interface with the personal computer is not quite as sophisticated as that found in the science fiction world of Star Trek, modern VR techniques can function very effectively given the proper equipment, environment and training. There are a few factors that impact VR accuracy:

Computer performance - Current higher-end models offered by vendors such as Dell, Compaq and IBM prove to be more than adequate for VR. Cheaper "consumer" computers and older models may not serve well as VR platforms.

VR Software Training - Amount and quality of training is extremely important. The algorithms must be trained properly in order to understand the user's voice to overcome variances in accents, dictation styles, and pronunciation.

User Techniques - Clarity and style of the speaker, and techniques used in correcting dictation errors are important factors.

Microphone - the quality of the microphone and position during dictation have a direct correlation with accuracy.

Sound Card - This interface device must be of high quality since it is receiving the electronic voice patterns in passing them on to the VR algorithms. High quality cards such as the Sound Blaster "Live" models are recommended.

Training

Normally, it takes approximately four hours of voice training for the computer based VR algorithms to become accustomed enough to the doctor's voice and pronunciation of words to render good speech to text results.

The doctor must be trained also. Consistent enunciation of words without slurring or inserting other erroneous sounds is paramount. One fact is clear, without the proper training of both the user and the computer, the VR system will not work properly and will not produce acceptable results.

Accuracy continues to improve with use, usually requiring approximately two weeks of normal dictation to complete the training process. At this point, the doctor can expect to work at speeds exceeding 150 words per minute.

Gaining Efficiencies with Instant Dictation Feedback

Additional efficiencies are obtained when the spoken words appear on the screen as they are being dictated, facilitating instant feedback. This is not possible utilizing the older batched transcription process. Because of inherently long turnaround times, a doctor is required to proof his or her resulting dictated patient documents on a schedule that is, in most cases, days, and even weeks later. VR affords the ability to dictate, proofread, and file the medical documentation all in one step, eliminating errors in transcription and filing.

Gaining Efficiencies by Combining VR with Templates and Macros

The next step in medical dictation efficiency is realized with the addition of specialized templates and macro tools unique to the integrated algorithms of MediTalk. Through the interface of a custom developed editor, simple voice commands can be associated by the computer with word processing document navigation and text insertion. This can greatly speed the generation of the patients chart documentation by reducing a good percentage of the actual medical documentation dictation and replacing it with short, simple voice based insertion commands.

For example, the repetitive wording in a typical SOAP note or referral letter can be developed one time and stored in a template. A short voice command (such as "insert soap") is all that is required for the doctor to insert the soap note heading verbiage and formatting into a patients active chart document, reducing the dictation time by more than one half. Also, the documentation generated from normal or frequently diagnosed examinations can be inserted into the template with another single voice command, such as "insert normal lungs and heart".

The functionality of MediTalk goes one step further by allowing the doctor or clinic administrator to develop the templates and macros in-house, eliminating the expense of a third party developer. A built-in, easy to use template editor allows the clinical staff to generate custom forms such as letters, charts, prescriptions, and encounter notes.

Printing Dictation for Filing

Many physicians find that automating the dictation process is all that is necessary to provide required efficiencies and cost savings. At this point, the resulting dictated text can be printed directly on paper and then filed in the traditional manner. This procedure is perfectly acceptable, but there is yet another option that can virtually eliminate manual filing and usher in the benefits of a paperless office environment.

Storing Dictation into Electronic Medical Records

The next step in automating the medical documentation process is to store the dictation and chart data electronically by utilizing computer and networking equipment for storage and retrieval of data. This, of course, is the real strength of computer systems, which has been utilized by the business community for many years.

MediTalk offers a robust and powerful data processing system for organizing, storing, searching, and retrieving patient chart data. The data engine is based on Microsoft's SQL Server database and provides hundreds of fields for specialized searches and reports. In addition, special interfaces have been developed to allow for the transfer of patient data from third party billing systems, eliminating double entry of demographic information.

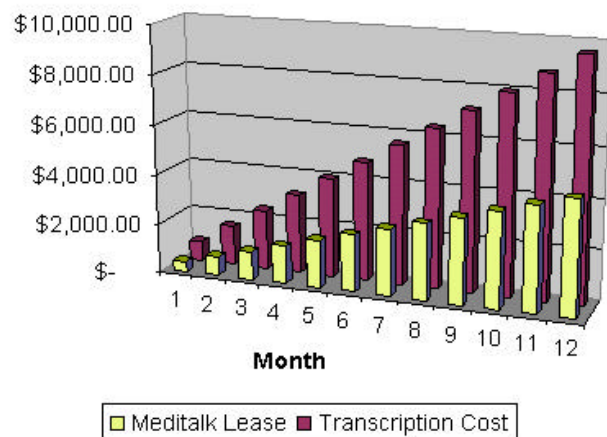
Patient data is secure on a server that can be housed in an area with access by authorized personnel only. Server data storage technology provides the means to store the data on multiple hard drives with mirroring. Nightly tape backups insure safe record retention and disaster recovery when stored in a fireproof safe, or off-site.

Cost Savings

In most cases, savings can be realized during the first month of system implementation by eliminating reoccurring transcription service fees. Payback periods typically run eight to twelve months, strengthening your ROI. Expensing hardware and software cost through a two or three years lease can provide immediate positive cash flow.

Graph Illustration: Comparison of transcription cost for one caregiver that averages \$800 per month with expense of a three-year lease-purchase of MediTalk system. Your savings may vary, depending on options and requirements.

Typical Monthly MediTalk Lease vs. Reoccurring Transcription Cost



Installation

MediTalk Enterprise was developed as a fully scalable client server application. It can be installed stand-alone on one personal computer, or on a network to provide multi-user functionality. Resource Management can provide a turnkey solution that incorporates the installation of all required hardware and software, along with training of physicians and support staff.

Benefits of a Wide Area Networking

By utilizing the Internet, a clinic or hospital can safely and securely connect various satellite facilities through a Virtual Private Network (VPN). This allows the sharing of data between facilities and elimination of redundant hardware, saving initial startup and monthly maintenance cost. It also allows for the storage of important patient records in one location where it can be kept secure and properly backed up.

An additional benefit of a secure VPN connection is the opportunity for the physician to dictate notes and review patient chart data from home or from any other mobile location with access to the Internet. This function can be especially beneficial to the doctor "On Call". Laptop computers are ideal for this purpose.

Summary

MediTalk has been developed to improve accuracy, reduce costs, increased security, and save time for the typical physician and staff. A medical organization or practice may benefit greatly from one or all of these automation tools as discussed in this White Paper.

The ultimate goal of Resource Management is to provide products and services that help improve the quality of patient care by automating the medical documentation process and reducing overhead costs by providing:

- A user-friendly software package easily accessible by both caregivers and administrative staff.
- An accurate speech-to-text dictation tool customized with a robust medical dictionary.
- A flexible application that provides custom templates and reports tailored specifically to the needs of a specialty, practice, or caregiver.
- A robust EMR data system that provides fast and accurate access to patient chart data and history.
- A scalable system that allows growth and connection of multiple locations.
- A secure system that provides data integrity by utilizing state-of-the-art client server and data storage technology.
- An accessible system that allows a secure mobile connection through the Internet.

To learn more about the benefits of voice recognition and electronic medical records systems, please contact Resource Management for a demonstration.